Using the DewMaster Deluxe Dew Point/ Humidity Hygrometer

The Model DewMaster is a versatile, multi-function, optical chilled mirror hygrometer designed to continuously measure the moisture content in gases. Available in benchtop, NEMA 4, or 19-inch panel mount configurations, the DewMaster readily adapts to a wide range of applications. It offers Users a wide range of sensor choices and interface options. It has been field proven in laboratories, industrial environments, and many customized applications.

The DewMaster uses the chilled mirror (CM) dew point temperature condensation principle to determine the water vapor concentration in gas mixtures, and a precision platinum resistance thermometer to measure the mirror temperature. The CM uses a thermo-electric device to control the temperature of the mirror in determining dew point. Since it is a direct measurement of dew point and thus a Primary Standard Measurement Technique. The DewMaster is highly regarded by laboratories and manufacturing facilities for its accuracy, quick dry down, fast response in detecting upset conditions and long life characteristics.

The DewMaster may be fitted with a precision air temperature sensor (needed to determine RH), pressure transducer, and a wide range of either local or remote chilled mirror sensors.

Two main types of chilled mirror sensors are available for the DewMaster: the remote mounted D-Probe featuring a two stage air cooled chilled mirror or the S-Series sensor- available in both local and remote mount configurations.

Depending on the desired measurement range, the S-Series sensor is available in Two or Three stage chilled mirror configurations. To accommodate different cooling thresholds, the S-Series sensor may be air cooled, fan cooled or liquid cooled.

In contrast, the D-Probe is only available as a Two-Stage chilled mirror. But since it is configured as a probe, it may be used in a wide array of applications including ambient air monitoring, insertion into glove boxes, HVAC ducts, environmental test chambers, circulation pipes, refrigerated storage rooms, engine test filter rooms.
The DewMaster offers many standard features including:

- PRIMARY STANDARD MEASUREMENT: Chilled Mirror measurement technique
- NIST Traceable calibration certificate
- Automatic Balance Cycle (ABC) automatically re-standardizes and corrects for contaminants
- Programmable Balance Cycle: ABC at programmed intervals or MABC (Manual ABC)
- Real Time Clock with date
- Two selectable Analog Outputs (4-20 mA, 0-20 mA, 0-5 VDC, 0-10 VDC scale able)
- RS-232 Serial Interface
- Two programmable electrically isolated alarm relays
- Pressure Transducer input for psychometric variable
- Universal VAC Power Input

Environmental Configuration Options

- Table Top standard
- NEMA 4
- 19-inch panel mount

APPLICATIONS

- Metrology Labs
- Environmental Chambers
- Quality Assurance Labs
- HVAC systems & Test Labs
- Laser Lab Air Make-up
- Clean Rooms
- Diffusion Furnaces
- Product Drying Chambers
- Environmental Testing
- Food Packaging
- Medical Packaging

- Data Center Air Makeup
- RH exposure testing
- Fuel Cell Testing
- Furnace Applications
- Pharmaceutical Powder Drying
- Materials Testing
- Plastics/ Molding Process Chemical Reactors
- Heat Treat/ Annealing Ovens
- Engine testing
- Calibration of other humidity sensors
**BENEFITS** of the Edgetech Instruments Chilled Mirror Sensor:
- Direct measurement method: recognized as a Primary Standard Technique
- **Improve** your quality control: Excellent Precision and Stability
- **Reduce Maintenance Costs**: Robust, Long Life, No moving parts, No consumables
- Rapid dry-down time in comparison to other technologies
- S series chilled mirror sensors come with auxiliary heat exchanger ports (1/4” tube) for connection to chilled liquid for measuring extremely low dew points.
- **Eliminate Scrap or Lost Time**: Fast response in responding to upset process conditions.

**Sensor Notes/ Sampling Configuration Options**

1. The DewMaster offers many features that allow the User to understand how the Chilled Mirror Sensor operates. These include the ability to program an ABC or manually force maximum heating or cooling of the TEC.

2. The S-Series chilled mirror sensors are flow through design and are equipped with 1/4inch Swagelok fittings. Aluminum construction is appropriate for most non-aggressive background gases. The S-Series do feature an option for Teflon Coating for additional chemical resistance.

3. As an option to the Teflon coated S-Series, the X3 body is constructed of 316SS and may be configured with Hastelloy or Teflon wetted materials. Inquire for pricing for the X3 inserts.

4. The S-Series sensors are equipped with a liquid chill port for injecting a flow of chilled liquid through the sensor chassis to aid in cooling the TEC to allow for lower dewpoint measurement.

5. The X-series sensors are designed as fan cooled or liquid cooled, but not both. The X3F and X3SF feature fans used to acquire more efficient heat exchange of the TEC and hence lower dewpoints.

6. The Standard D-Probe features air convection heat exchange and in many instances can measure lower dewpoints when inserted into a cooler atmosphere.

7. Addition of the Pressure transducer option allows the DewMaster to be configured to automatically compensate the Dew Point reading for pressure variations of the sample gas.

8. The D-probe is mounted (remote) tethered on a signal cable.

9. The S-series sensor can be mounted either local at the DewMaster or remote tethered.

10. The standard D-Probe is configured for diffusion sampling.

11. To measure an extracted flow of sample gas with the D-Probe, the optional flow through cover (SC) or the Sample Chamber (SC1) may be installed (includes fittings).

12. A precision air temperature probe is optional. Temperature can be used to calculate and display RH%.

13. The SMU vacuum pump module may be used to extract a gas sample from the measurement point and direct it through the sensor. Ideal flow is 1-2 SCFH

14. An optional chiller may be used to obtain temperature depressions greater than 95C when using the S-series sensors. Chiller liquid ports are provided on all S3 sensors.
Choosing the Right DewMaster Configuration:

1. Determine type of measurement: Dewpoint, Relative Humidity, Pressure, Temperature. The AT temperature probe is required for Relative Humidity.
2. Determine the range of measurement and type of sensor: D-Probe or S-Series.
3. Your application determines whether to select local mounted sensor(s) or remote.
4. Select type enclosure based on the application: Table Top (standard), NEMA 4, or Rack.
5. Select Sensor Type. When choosing a remote sensor configuration:
   a. The D-probe is always remote. Always add –RK option
   b. The S series sensor may be remote mounted. Add –RC option
   c. The X series sensor may be remote mounted. Add –RX option
6. Select special sensor mounting options if using D-Probe
7. Select Options such as temperature sensor, Pressure Transducer, PPMv measurement...
8. List as separate line items additional choices such as Accessories, Calibration Packages, and Extended Warranty.

For Example: DM-S3-ATDM would be a DewMaster Table Top with S3 fan cooled CM sensor and air temperature probe.

CREATING A DEWMASTER MODEL NUMBER:

STEP 1: Choose Enclosure Type:

<table>
<thead>
<tr>
<th>DM-</th>
<th>ENCLOSURE</th>
<th>SENSOR</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>-N</td>
<td>standard is Table Top</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-RMDM</td>
<td>19-inch Rack Mount Kit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-PMDM</td>
<td>19-inch Panel Mount Kit</td>
<td></td>
<td></td>
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</tbody>
</table>

Standard Table-Top

NEMA 4 (Optional Chiller shown)

Panel Mount

Rack Mount
Additional Notes on configuring the Dew Master:

To help determine the best sensor for your application:

1. The target dew point range will help you determine the right sensor. Our D-Probe, S2 and S2SC sensors feature the two stage chilled mirror sensor for measuring dew points no lower than -40 °C (in some instances this may require liquid cooling of the sensor depending on the temperature of the ambient air). The S3 and the X series sensors can measure lower dew points. The X3F and X3SF can measure very low dew points without the need for any liquid cooling.

2. If you intend to measure sample gas that may be corrosive or reactive, the best choice may be the X3 series since the standard design is resistant to most aggressive gases.

3. The X3LC is designed for liquid cooling (no fans on the device) for extra low dew point measurement.

To help determine the best options for your application:

1. If the sample gas is positive pressure, then no special options required as long as the sample pressure does not exceed 300 psig.

2. If the positive pressure sample fluctuates, you may consider adding the pressure transducer option which can be set to automatically pressure compensate the dew point reading.

3. If you want to measure temperature (or if you want to measure RH%) you should add the AT temp probe.

4. If the sample pressure is at atmospheric or slightly negative pressure (no greater than -10mm Hg) then adding the vacuum pump option would be suitable for the application.

5. If using the D-Sensor insertion probe, you may choose different mounting configurations (see section 5)

STEP 2: Choose Sensor Type based on Sampling, Range and Chemical Resistance

The DS2 is a remotely mounted insertion probe that can be inserted into the process measurement point. It is available in a variety of configurations including:

- Duct Mount: for measuring HVAC or building air ducts or air moving systems
- Flange Mount: Mounts within a pipe flange for connection to process pipe riser
- Surface Mount: Held within Bolted Plastic Clamp Tube Supports
- Pipe Mount: Fitted with a 1.25 in. NPT male threaded adaptor
- Sampling Flow Through Cover: via ¼” compression fittings

2. The DS2 is limited to a two stage TEC configuration

3. The S-series sensors are designed with flow through sampling. Typically mounted directly to the DewMaster but may be mounted remote with robust signal cable (provided).

4. The D and S series sensors are aluminum construction, suitable for use with inert gases & air

5. The S series sensors are available (optional) in teflon coated or high pressure configuration

6. The X series sensors are 316 Stainless Steel construction with options for Teflon or Hastelloy

7. The X series sensors offer chemical resistance, lower dew point capability, and fast dry down

8. Both the X3 and S series sensors may be remote mounted. See remote mount kit options

<table>
<thead>
<tr>
<th>Applications</th>
<th>General Purpose Gases</th>
<th>Acids</th>
<th>Caustics</th>
<th>Salts</th>
<th>Organics</th>
<th>Nuclear Application</th>
<th>High Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chrome</td>
<td>A</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>316 Stainless Steel</td>
<td>A</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>B</td>
</tr>
<tr>
<td>Platinum</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

A  Excellent
B  Very Good
C  Good
D  Not recommended
NR Not Rated
9. When ordering X3, please state background gases and expected chemical exposures.

Teflon Coated units designed for aggressive chemicals.
P versions are special construction for high pressure sample.

**STEP 3: Choose Mirror Type based on Chemical Resistance Requirements:**

No Designator = Standard Chrome Plated  
-SS = Stainless Steel  
-PT = Platinium

**STEP 4: Choose Local or Remote Sensor (DS2 sensor always remote mounted):**

-RC Remote Mounting Kit S-type Sensor 10’ Cable, additional lengths add $4/foot
-RK Remote Mounting Kit D-type Sensor 10’ Cable, additional lengths add $4/foot
-RX Remote Mounting Kit X-type Sensor 10’ Cable, additional lengths add $4/foot

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**Chilled Mirror Dew Point Sensors for the Dew Master**

<table>
<thead>
<tr>
<th>Description</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS2 2 Stage, Insertion Probe, AL, Convection Air Cooled, Diffusion Sampling w/cable</td>
<td>60K</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2 Two Stage, Al Body, Convection Air Cooled- No Fans, Flow Through Sampling</td>
<td>60K</td>
</tr>
<tr>
<td>S2SC Two Stage, Al Body, Fan Cooled, Flow Through Sampling</td>
<td>65K</td>
</tr>
<tr>
<td>S3 Three Stage, Al Body, Fan Cooled, Flow Through Sampling</td>
<td>95K*</td>
</tr>
<tr>
<td>P S2P or S3P: High Pressure option 900 PSIG</td>
<td>Price varies by sensor</td>
</tr>
<tr>
<td>T S2T or S3T: Teflon Coated Interior for chemical resistance</td>
<td>X3 may end up replacing this</td>
</tr>
</tbody>
</table>

* Liquid Chilling may be required in the S3 to attain 95C Depression, fan only –depression of 70C

**Standard S & X series sensors rated for 300 PSIG sample Pressure**

<table>
<thead>
<tr>
<th>Description</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>X3P 3 Stage, Panel Mount, SS Body, Convection Air Cooled- No Fans, Flow Thru</td>
<td>65K</td>
</tr>
<tr>
<td>X3 3 Stage, Panel Mount, SS Body, heat sink through panel</td>
<td>70K</td>
</tr>
<tr>
<td>X3F 3 Stage, SS Body, Standard Fan Cooled, Flow Thru Sampling</td>
<td>85K</td>
</tr>
<tr>
<td>X3SF 3 Stage, SS Body, High Efficiency- Super Fan Cooled, Flow Thru Sampling</td>
<td>95K</td>
</tr>
<tr>
<td>X3-L 3 Stage, SS Body, Liquid cooled (0°C)</td>
<td>115K</td>
</tr>
<tr>
<td>X3-C 3 Stage, SS Body, Refrigerant cooled (-30°C)</td>
<td>125K</td>
</tr>
</tbody>
</table>
STEP 5: Choose Special Sensor Options for D-Probe:

-When Ordering the D-probe, you can specify:
  - **AR** Aspirator: Pulls surrounding (ambient) air stream into sensor for fast response.
  - **P** Pipe Mount: provides a 1.25INCH Male NPT penetration into process such as air feeds to engine test cells
  - **D** Duct Mount: Sensor is mounted onto a gasketed plate for measuring HVAC duct air
  - **F** Sensor is Mounted into a Pipe Flange w/ Gasket seal for process piping penetrations
  - **SM** Surface Mount: Sensor is mounted in a plastic clamp that can be surface mounted for glove box or ambient air
  - **US** Unistrut Mount: Sensor is mounted in a plastic clamp that can be attached to Unistrut for process skids…
  - **SC1** High Pressure (up to 100psig) Sample Chamber provides ¼ inch Swagelok compression fitting ports
  - **SC** Slip on –low pressure sample cover slips onto d-Probe
STEP 6: Choose Options such as PRESSURE COMPENSATION:

- **ATDM** Air temperature probe, stainless steel sheath with 10ft cable and connector, can be used for RH% conversion
- **PTDM** Pressure Transducer, 0 to 25PSIA or 0-150PSIA, or 0-300PSIA, automatically pressure compensate Dew Point
- **PPM** PPM measurement @ fixed pressure (Converts units to Parts Per Million- Volumetric measurement)
- **SA/.1** 0.1 °C Special accuracy, traceable to NIST (Certified)
- **SA/.15** 0.15 °C Special accuracy, traceable to NIST (Certified)

**Accessories/ Spare Parts/ Special Services:**

- **-FIL** Filter kit: includes fittings and additional elements; rated for .1 micron particulate
- **-DX** Additional box of elements. Qty. 3
- **-PMDM** Panel Mounting kit: 19” Panel, for existing panel
- **-RC** Remote Mounting kit (10ft of Cable) additional lengths available up to 12 meters (S-Type)
- **-RK** Remote Mounting kit (10ft of Cable) additional lengths available up to 12 meters (D-Type)
- **-RMDM** Rack Mounting kit, includes -PMDM
- **-SC/O** Replacement D-probe Slip on diffusion Sensor Assembly Cover D-sensor series
- **-SC/S** Replacement S-Series Threaded Sensor Cap
- **-SMU** Sample Module Universal, 115/230 VAC operation. Vacuum pump system for VAC operation
- **-CAB** 3 channel cabinet holds up to 3 rack mounted DewMaster Rack modules
- **-3YEW** 3 Year Service Contract

**Additional Configuration Images**
Design Features of the 3 Channel Rack Mount Cabinet

- Accommodates up to 3 x DewMaster Rack Mount Modules
- Highly styled and versatile steel cabinet
- Common Power Strip.
- Supplied w/ See-Thru front door with tempered glass window.
- Solid steel removable side panels.
- Equipped with 110V AC, 65 CFM exhaust fan for cooling.
- Cable access holes on top and bottom.
- Supplied with steel wall mounting bracket.
- Four mar resistant feet on bottom surface.
- Finish: Smooth Black Powder Coating

25in H x 23.62 W x 17.72 D

Bei Fragen wenden Sie sich bitte an :

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